LIFE HISTORIES OF SOME VICTORIAN LYCAENIDS.

BY C. BORCH.

The butterflies that I propose to deal with in this paper, namely, the Moonlight Blue, *Miletus delicia d'elos*, the Mistletoe Blue, *Ogyris olane*, the Scarce Mistletoe Blue, *Ogyris abrota*, and the Imperial Blue, *Ialmenus evagoras*, all belong to the family Lycaenidae, which, in Australia, contains about 140 species.

An interesting habit in connection with Lycaenidae is that, in the early stages of their development, they are attended by ants—some exceptions to this rule are known. Each species of butterfly seems to have a particular species of attendant ant. One of the best methods of finding larvae and pupae of many of these butterflies is to search ants' nests, in, or near, the known food plant of the species. In their appearance and habits, the attendant ants vary as much as do their charges. Some of them are very tiny, and of quiet, inoffensive habits, while others, such as that species associated with *Protialmenus ictinus*, one of the beautiful tailed- Blues, is large and ferocious—the "meat-ant," *Iridomyrmex detectus*.

Some species of Blues are gregarious, being found in such numbers as almost to destroy the food plant, while others are found singly, or in twos and threes.

The Moonlight Blue is justly regarded as the most beautiful Victorian butterfly. The genus *Miletus*, is a large one, and confined to Australia, New Guinea, and some of the adjacent islands. Most species of *Miletus* are brilliantly colored, and have their upper wing surfaces brilliantly metallic, and the lower ones with metallic lines and curved patterns. *Miletus delicia* is the finest and largest of our three Victorian species. In the male, there is a large area of scintillating silver green, margined with black, while in the female the colour is changed to silver blue. This insect is on the wing during November and December. My earliest record of appearance is November 24. Yet one emerged as late as January 1 (1927). Only one brood is hatched during the year.

Eggs of this Blue are laid in the trunks of Black Wattles, *Acacia decurrens*, and always in a tree containing a nest of a small black ant. This ant lives in tun-

nels, made by the boring larvae of large moths and beetles, in the tree trunk, or under partially loosened pieces of bark. It is at the entrance to the homes of these ants that the female butterfly deposits her eggs. As many as 20 or more eggs may be placed upon the same tree, but probably these are laid by more than one female, as the caterpillars are often of different sizes. The larvae hatch out about January, and from that month until they pupate, during October and November, they are constantly watched over by the ants. The tiny caterpillars keep out of sight during daylight, lurking under pieces of bark or in the ant tunnels, and emerge at night-time for feeding purposes. By March, they have grown to about a quarter of an inch in length, are of a greyish color; in shape, flattish and sluglike, and are clothed with a few short, scattered hairs.

This is an opportune time to hunt for larvae, as the cold has not yet driven them deep into the recesses of the ants' nests. With the advent of colder nights, they penetrate deep into the nests, and emerge to feed only during warmer spells. For some months now, very little growth is apparent; in fact, it may almost be said that they hibernate, but July sees themon the move again, and, on warm nights, they ascend the trees to feed on the foliage. Two or three ants always appear to accompany the caterpillar on its foraging expedition, swarming and clinging to its back, and returning with it. During the first and second weeks of August, the larval skin is cast for the first moult, and from this time until pupating, growth is rapid. Before casting the skin, larvae are of a dark slatey grey colour, with skin tight and stretched, but immediately after, the colour has a whitish, transparent appearance, with the skin loose and free.

In 1926, I observed the first sign of pupation on October 7, when some of the larvae had fastened together two pieces of wattle bark by means of several silken threads. The interior of the bark had been partially covered with this thread, spun round and round the spot intended for use during the pupal stage. On October 10, the first one attached itself for pupation by means of a silken girdle round the waist, and its two tail claspers. It remained quiet until October 17, when it had assumed a more rounded appearance, and had changed color from a dark grey to a light brown. On the 17th, pupation was complete, and the butterfly emerged

November 24, showing the pupation period as having been thirty-eight days. The only localities in which I know of this butterfly having been taken are Springvale, Launching Place, and Woori Yallock.

A characteristic of all the *Miletus* is, that they are very local and are seldom taken far from their haunts, but they may be obtained, year after year, in the same place, and, indeed, in the same tree. It has been claimed that the larvae could not live without the company of the ants; but the late Mr. W. H. Rogers proved this to be incorrect. He kept a caterpillar from March until it pupated, about seven months later, without the attention of even one ant.

Miletus larvae appear to suffer very little from attacks of the small parasitic ichneumon fly, and I have only on one occasion, bred out an ichneumon. Indeed, the ants seem to form a very efficient protection against many of the enemies from which unprotected species suffer most heavily. The association is of mutual benefit, however, for the ants obtain food in the form of a sweet substance exuded from a gland towards the anal end of the larva. This is much relished by the ants.

Ogyris olane is also a member of a large genus, confined to Australia, with the exception of one species, *Ogyris meeki*, which is found in New Guinea. They are all strong, robust insects. Some are extremely beautiful, with brilliant satiny blues or deep velvet blues, contrasted with cream and black markings. All are mistletoe feeders, though the *Loranthus* selected by different *Ogyris*, is of various species. In one of the largest forms, *O. zozini*, an interesting peculiarity noticed in the females is that they assume two distinct colours, with no intermediate forms. In one form, the central wing areas are metallic blue, in the other, distinctly purple. Appropriate popular names are given to some of these *Ogyris*, such as the "Cooktown Beauty" for *O. aenone*, and the "Satin Blue" for *O. amaryllis*.

The Mistletoe Blue is one of the few Lycaenids not attended by ants, for it has no secretory gland, yet very often I have taken it very near, or in association with, ants. It is a moderate-sized butterfly, with wings edged with black, and with bluish purple central areas. The female is larger and of a brighter blue, and is an exception in that she is more showy than the male. Butterflies are on the wing right through each month from September to April—my earliest record being September 3. Two main broods, however, emerge—in November, and

in February and March. In the first brood, males predominate; in the second, females. Eggs are laid, on the clumps of *Loranthus*, in ones or twos, usually on the stems or leaves. The small larvae frequently hide close up to the mistletoe, under loose bark, etc., only venturing out for food at night-time. As they grow, they wander further and further away from their food plant, and often, when searching the butts of the host tree, I have found caterpillars 40 or 50 feet from the nearest food plant. This journey must be made twice during each night, to obtain meals.

The caterpillars of this species are of an oval, rather flattened shape, with segments well defined, and are of a dirty yellow-brown colour. They are rather naked, and only taken singly or in pairs. I am not aware of the time occupied in the larval stage; it is probably eight or nine weeks. When ready, the insect attaches itself to the underside of a piece of bark by means of the waist girdle, and to a piece of web by the tail. The pupating period varies considerably, and is influenced by the weather. In the cold months, the pupal stage extends over fourteen or sixteen weeks; and yet I have a record of only 33 days—from November 16 to December 19. This is a common insect, and I have taken it in many localities in Victoria, including Ringwood, Eltham, You Yangs, Lilydale, Ballarat, and Bendigo. The larvae of this butterfly are much more parasitized than those of the previous species, for they lack the ant protection.

Ogyris abrota, the Scarce Mistletoe Blue, is much rarer than *O. olane*, and is much larger than that species. The male, with rich, dark purple wings, bordered with a narrow black band, is an exquisite insect. The female is so distinct that she has been described as a different species. Her forewing is brown-black, with a large central cream area. Her eggs are deposited in the same position as are those of *O. olane*, except that she selects a different species of mistletoe. The larvae are always attended by numbers of ants, and never appear to wander far from the mistletoe. Thus, if you see the food plant of *O. abrota* 40 feet up in a eucalypt, you must climb 40 feet, and search the bark close to the mistletoe, else obtain no pupae.

I remember this habit of the butterflies getting me into trouble one day. Out at Mordialloc with a friend, I saw large masses of food plant high up. A butterfly leisurely examining clump after clump of mistletoe decided me to climb, as a careful search round the butt had revealed

nothing. Temptation overcame my fear, and I crawled further and further out, examining a large limb as I went, until, finally, I found myself unable to ascend or descend, or move backwards or forwards along the bough. A most uncomfortable five minutes ensued, until my companion came to my rescue with a borrowed ladder.

Two broods appear on the wing, one in October and November, and the other in March. I have bred out odd specimens late in April. Larvae are very difficult to distinguish from those of *O. olane*, but those of *olane* have a small black patch on the back, absent from the *obrota*. The only localities at which I have taken this species are Springvale, Ringwood, You Yangs, Broadmeadows, and Mordialloc.

The last of our four Blues, *Ialmenus evagoras*, is a particularly interesting insect. It is found in Victoria, and right through to Southern Queensland. An elegant insect, it has large wing areas of pale metallic blue, bordered with black. A conspicuous tail projecting from each hind wing, gives it a distinctive appearance as a cabinet specimen. It is a truly gregarious insect, and seems to favor the small stunted specimens of its food-plant, the Black Wattle. I have seen trees completely denuded of foliage, and dying, from the activities of the larvae.

The butterflies are on the wing from November till April, and may be seen in numbers, flying about their food trees. The females seem disinclined to leave the immediate vicinity of their food-trees, and lay their eggs in clusters on stems, under leaves, or on a fork where a limb joins the main trunk. Every stage of the life history may be observed from the egg to the pupa, and the imagos breaking through the pupal skin.

The larvae are of a shining, blackish colour, with segments well defined; and are constantly covered with a swarming mass of black ants. The progress of a larva along a twig always amuses me, each wave of the caterpillar's body, as it progresses, exhibiting a heaving mass of seething ant life. Obtaining pupae or larvae is likely to be quite an unpleasant operation, as the moment one touches or vibrates the tree, ants rush all over the twigs and leaves, and do not hesitate to inflict a painful little bite. I have found the best way is to pluck the twig off quickly, and drop it on the ground nearby. When a number of the ants have left it, the twig may be again

moved, and in this way, after three or four moves, it is moderately free from ants, and may be handled with some degree of comfort.

The larvae of *I. evagoras* have a habit of dropping a thread as they move, and in time, this covers most of the larger stems with a fine silken covering. Quite a web is formed at the most populous centres, and when the larvae are fully grown, that is, when they are about one inch long, they affix themselves to this web, usually clustered round one of the stems. Sometimes twenty or more pupate in a cluster. Pupae are of a nitid brown-black color, and are always covered with numerous ants. The pupal period is short, being only about fourteen days.

This species is widely distributed in Victoria, some records that I have being Eltham, Woori Yallock, Ballarat, and Daylesford.

MORNINGTON PENINSULA.

Mr. A. S. Kenyon contributes the following notes, to add to Mr. Keble's paper on the Mornington Peninsula, in the October "Naturalist."

Settlement was complete, and the whole Peninsula occupied by 1838. Yaen Yaen is not new, but is a portion of the name Bangyanyan, later degraded officially to Bunguyan. Sandstone Island, known as Woor-a-blah, was the seat of many experiments by the Acclimatisation Society; pheasants, skylarks and thrushes were liberated there. Balnarring, originally Bullalnarrin, was a Post Office, not a run. Manton's Creek was the original run name for Meremendiewokewoke. Manton had Tooradin also. The Tucks were late comers, not arriving until 1846.

Balla Balla was first taken up by Robert Innes Allen, 1840, but abandoned shortly after. Mooroodue and Morradoo are descriptive, meaning flat, swampy. Ballarong, variously spelt Ballanrong, Ballamrong, Balliannrong, Ballyrangue, Bullerangan, Billerangue, Bellerangue and Ballanarong, was, after Jamiesons, the earliest run along with Coolart, which is a very recent spelling, Coolort, Collert, Coolert and Coolurt being the original varieties. Merricks should be Meyricks; Boneo is an older name than Boniyong; Boneo is the Swamp, Boniyong the grazing land north of it. Dr. Barker took up Boneo and Barrabang at the same time. Chechingurk was originally Tichingorouke.

ALBINO KOALA.

A pure white Koala, with blue eyes, must be a rarity. The very fine specimen figured here was obtained, when quite young, on the Rosedale Road, about five years ago. Since then it has lived on a dead branch fixed in the ground of the yard of the Woodside Hotel, at Woodside, near Yarram. Its owner, Mrs. Henderson, who has a special permit allowing her to keep it, states that soon after it was obtained, it gave birth to a grey "joey." It lives mainly on Eucalyptus leaves, but is said to be very partial to the foliage of the swamp paper-bark, so abundant in the locality. As far as is known, it has never drunk water or any other liquid, only once going to the length of smelling the former on a particularly hot day.